A FURTHER REPORT ON PARASITIC NEMATODES IN THE COLLECTION OF THE ZOOLOGICAL SURVEY OF INDIA.[1]

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The greater part of the nematode collection of the Zoological Survey has been reported upon in a former publication (Baylis and Daubney, 1922). When this report had already been sent to India for publication, a further consignment of material was received. This had been partly worked out by Major F. H. Stewart, I.M.S., and had been sent to him after his return to England, in order that he might complete his investigations.

Major Stewart, hearing that we had been working at other material belonging to the Zoological Survey, very generously offered to hand over to us the specimens in his possession, together with his manuscript notes and many excellent drawings, which he was kind enough to place unreservedly at our disposal.

It so happens that many of the little-known species studied in India by Major Stewart have been fairly fully redescribed by other workers in the meanwhile, and it is not considered necessary to publish new descriptions of them in this paper. In the case of certain species which still stood in need of better description, we have made free use of the information supplied by Major Stewart's notes, and have reproduced some of his figures. In such cases the origin of the descriptions and figures is indicated in the text.

A few forms received later from the Zoological Survey are included in this report.

The number of new forms in the present collection is small. Three new species, including one which has been made the type of a new genus, have already been briefly described in a short note (Baylis and Daubney, 1923), and fuller descriptions of them, with figures, are given here. Several species, some of which were described in the former report, occur again in this collection. In some cases they are recorded from new hosts.

As in the earlier report, the names used for Indian host-animals are those given in the *Fauna of British India* (1888-1898).

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[1] The first report appeared in *Mem. Ind. Mus.* VII, 4 (1922).

Superfamily ASCAROIDEA Railliet and Henry, 1915.

Family *ASCARIDAE* Cobbold, 1864.

Subfamily ASCARINAE Travassos, 1913.

Genus **Ascaris** L., 1758.

Ascaris equorum Goeze, 1782.

The collection includes two males of this species collected from horses on different occasions, and in addition a single female *Ascaris* having the general appearance of *A. equorum*, labelled as "from the intestines of cattle." This specimen differs greatly in appearance from those which we have regarded as *Ascaris vitulorum* (see Baylis and Daubney, 1922), although in the light of recent work by others (Boulenger, (1922); Macfie, (1922)) it seems not impossible that two forms have at different times been confused under this name.

There are a few references in literature to the occurrence of *Ascaris equorum* (*A. megalocephala*) in cattle, but the matter is one that needs further investigation.

Genus **Belascaris** Leiper, 1907.

Belascaris mystax (Zeder, 1800).

Material from the tiger and leopard is included in the collection.

Belascaris marginata (Rud., 1802).

This species is represented by a few specimens (three sets) from dogs.

Genus **Toxascaris** Leiper, 1907.

Toxascaris leonina (v. Linst., 1902).

One set of specimens, "vomited by a lion."

Toxascaris transfuga (Rud., 1819) Baylis and Daubney, 1922.

From a bear (*Ursus* sp.).

Genus **Ophidascaris** Baylis, 1921.

Ophidascaris filaria (Duj., 1845).

Several sets of specimens from *Python molurus*, *P. reticulatus* and *Python* sp., including two batches of immature forms from the lung of *P. molurus*.

Ophidascaris naiae (Gedoelst, 1916).

(Figs. 1, 2.)

In our former paper (Baylis and Daubney, 1922) we referred to this species material from *Naja tripudians* and from *Bungarus fasciatus*, but did not attempt to describe it. The present collection also includes a few specimens from *Naja tripudians*, *Bungarus bungaroides* and *B.*

fasciatus. Those from *Naja tripudians*, collected at Sara Ghat, are in fairly good condition, but do not attain quite the full size given by Gedoelst (1916). They include one male, two females and some immature forms. The rest of the material is in rather poor condition, and will not be specially considered.

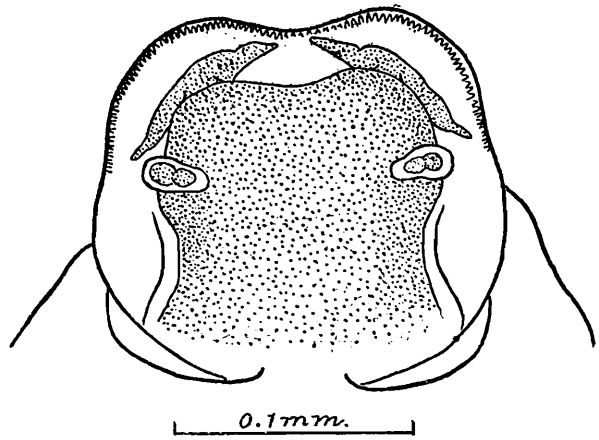

Fig. 1.—*Ophidascaris naiae*. Dorsal lip of female; external aspect. (Original.)

It is difficult to be certain of the specific determination, owing to the absence of sufficiently precise characters from the original description, and the absence of figures.

The number of postanal papillae in the male agrees with Gedoelst's account, and their arrangement in our male specimen is indicated in fig. 2. The three nearest to the tip of the tail on either side form a triangle, two being lateral or subdorsal, the third very small and subventral. A little more anteriorly there are two ventral pairs, and at the sides of the cloacal aperture, somewhat widely separated from the rest, a pair of very large papillae, apparently having double terminations.

The spicules in this specimen measure 3·25 mm. and 4·3 mm. respectively, the longer being that of the left side. (Gedoelst gives 4·64 mm. and 5·04 mm.).

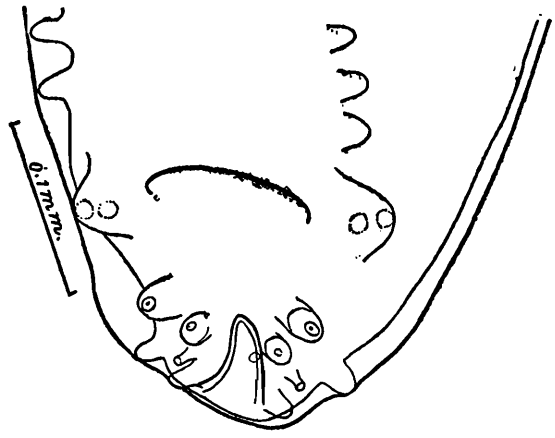

Fig. 2.—*Ophidascaris naiae*. Caudal end of male; ventral view. (Original.)

The oesophagus may attain a length of 3·25 mm. or more in the female (Gedoelst gives 2·9 mm.). The structure of the lips, in our material,

is characteristic (fig. 1). The pulp sends out two forwardly and inwardly directed lobes, each of which is prolonged in opposite directions into two points, one running forward and towards the middle line of the lip, the other backward and towards the margin. Radiating processes have not been seen on these lobes, but apart from this they are very similar to those of *Ophidascaris filaria.*

The vulva is considerably behind the middle of the body. In a specimen just under 51 mm. long, it was situated at 21·7 mm. from the posterior end. The vagina is long, narrow and sinuous, and passes gradually into the unpaired portion of the uterus. This and the two branches of the uterus are very short. The latter, after a sinuous course occupying about 10 mm. in the 51 mm. specimen, pass suddenly into short, narrow, muscular canals, and these again into the wider oviducts. The coils of the ovarian tubes extend backward to about 4 mm. from the posterior end and forward to the level of the vulva.

Ophidascaris sp.

Taken from the stomach of *Tropidonotus piscator* on two occasions, once in the Botanical Gardens, Calcutta, and once by Col. F. Wall, I.M.S., at Dibrugarh, Assam. The material is in very poor condition, and we are unable to determine it with certainty. It may possibly be *O. gestri* (Parona, 1890).

Genus **Polydelphis** Duj., 1845.

Polydelphis anoura Duj., 1845.

(Figs. 3, 4.)

Host. *Python molurus.* Localities: Nepal Terai; Kichha, Naini Tal District.

The material from Kichha consists of very numerous examples of both sexes. These, being in a somewhat macerated condition, enable certain details to be easily made out which, in better-preserved material, have hitherto escaped notice.

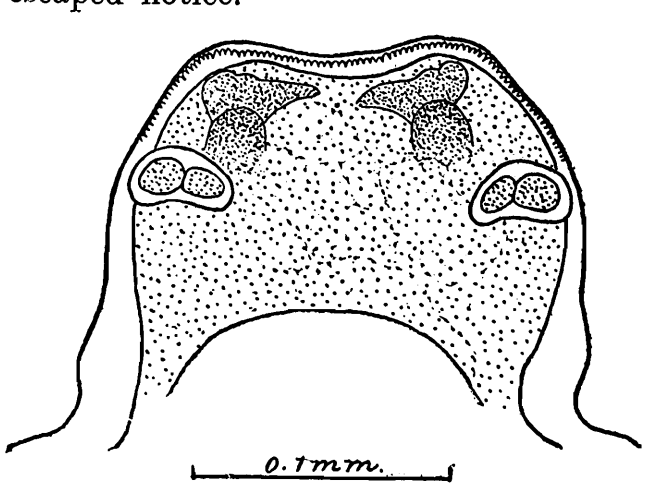

FIG. 3.—*Polydelphis anoura.* Dorsal lip of male; external aspect. (Original.)

In a former paper one of us (Baylis, 1921) summarized the existing descriptions of this species and added a few original observations, but

the only male example then available for examination could not be referred with certainty to the species, and was therefore disregarded. The statement that there were only two pairs of postanal papillae in the male was quoted from other authors. In the light of the present material this statement is clearly seen to be incorrect. As the accompanying figure (fig. 4) shows, there are six pairs of postanal papillae, of which the most anterior pair consists of large double papillae, situated near the corners of the cloacal aperture. As is commonly the case in this group, the three pairs nearest to the extremity of the tail are so arranged as to form a triangle of three papillae on each side. Between these and the large double papillae there are two pairs situated ventrally. In addition to the usual row of preanal papillae on each side of the ventral surface, there is a median preanal papilla with double terminations.

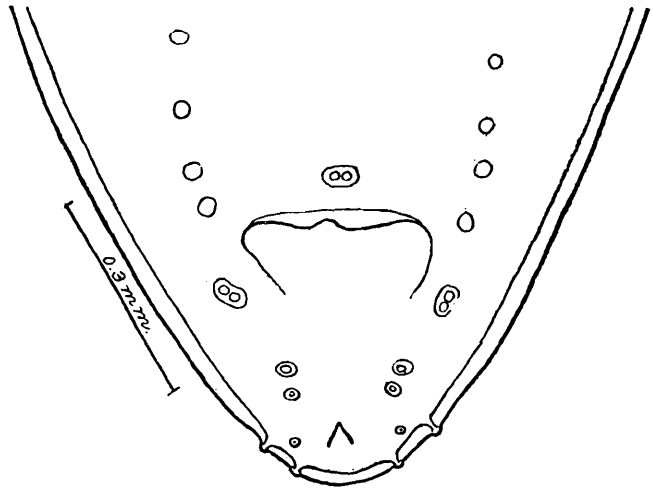

Fig. 4.—*Polydelphis anoura.* Caudal end of male; ventral view. (Original.)

The lips also require further notice. They are somewhat emarginate, and not straight, in front. The pulp of each lip sends out two inwardly and forwardly directed processes, with flattened and expanded terminations. The expanded portion has somewhat the outline of a human foot. Radiating processes on its border are either absent or very hard to detect. The lip therefore somewhat resembles in structure that of *P. oculata*, as figured by v. Linstow (1899, fig. 7). On re-examining other material, previously determined as *P. anoura*, from *Python molurus* and also from an African python, the same processes of the pulp were recognised, and they may therefore be regarded as a constant specific character.

Polydelphis quadricornis (Wedl, 1862).

Two specimens "from gut of snakes," Katagum, N. Nigeria, presented to the Indian Museum by Dr. J. H. Ashworth, are referred to this species.

Polydelphis sewelli Baylis and Daubney, 1922.

This species, originally recorded by us from *Coelopeltis monspessulana* from Palestine, appears to be represented in the present collection

by material from *Tropidonotus stolatus* from Lakhimpore, Assam, and from *Tropidonotus piscator* from Dibrugarh, Assam, in both cases collected by Col. F. Wall, I.M.S. Specimens collected on two occasions from *Bungarus fasciatus*, in one case by Col. Wall at Dibrugarh, though not determinable with certainty, are probably also referable to the same species.

Polydelphis sp.

Two male individuals, from the stomach of *Lachesis* (*Trimeresurus*) *gramineus*, collected by Col. F. Wall, I.M.S. Determination uncertain.

Subfamily ANISAKINAE Raill. and Henry, 1912, *emend.* Baylis, 1920.

Genus **Porrocaecum** Railliet and Henry, 1912.

Porrocaecum angusticolle (Molin, 1860).

This species, redescribed by us in our former paper from material taken from *Milvus govinda*, is here represented by some female specimens from the intestine of a vulture, collected by Mr. T. Southwell at Satpara, Chilka Lake, Orissa.

Porrocaecum sp.

A number of larval forms from the mesentery of a fish, *Otolithus maculatus*, collected by Mr. I. H. Burkill.

Genus **Contracaecum** Raill. and Henry, 1912.

Contracaecum spiculigerum (Rud., 1809).

Some specimens of this species were collected from the little cormorant (*Phalacrocorax javanicus*) by Dr. S. L. Hora at Samal Island, Lake Chilka.

Contracaecum microcephalum (Rud., 1809).

Taken from a pond heron (*Ardeola grayi*) by Dr. S. L. Hora at Samal Island, Lake Chilka.

Contracaecum haliaëti, nom. nov.

Syn. *C.* (*Ascaris*) *aquillae* (Smith, Fox and White, 1908) Baylis, 1923.

Three females, corresponding with the description of *Ascaris aquillae* given by Smith, Fox and White (1908), were taken from the upper part of the intestine of a white-bellied sea-eagle (*Haliaëtus leucogaster*) at Barkuda Island, Lake Chilka.

The name *aquillae* is presumably a *lapsus* for *aquilae*, and the combination *Ascaris aquilae* was used by Gmelin in 1790 for another worm. Consequently it becomes necessary to rename the species described by Smith, Fox and White. It appears not impossible that this is identical with the *Ascaris ceylanica* described by v. Linstow (1904) from *Haliastur* and *Poliaëtus* in Ceylon. From the figure of the head v. Linstow's species would appear to be probably a *Contracaecum*, but the descrip-

tion is so brief that we are unable to identify the species with certainty with *A. aquillae*, and have therefore thought it advisable to give the latter an entirely new name.

Contracaecum lobulatum (Schneider, 1866).

(Fig. 5.)

Host. Gangetic dolphin (*Platanista gangetica*) (stomach and mouth). 5 sets of material. Locality (when given), River Hughli, near Calcutta.

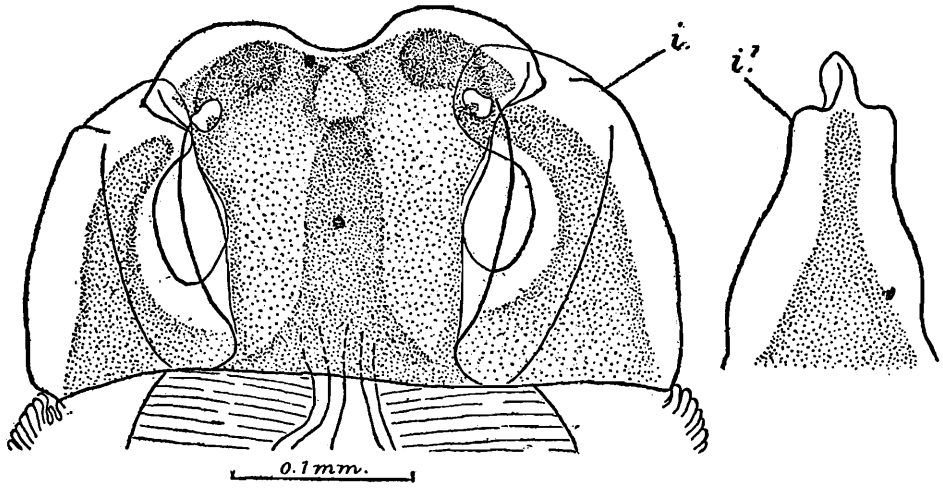

Fig. 5.—*Contracaecum lobulatum.* Head of female; dorsal view. *i.* interlabium, in profile; *i'.* external aspect of same. (Original.)

The abundant material of this species in the collection is unfortunately all in rather poor condition. We refrain from attemping a full new description, but give a new figure of the head (fig. 5). The existing literature dealing with the species is rather scattered. Schneider (1866) gives a very short diagnosis, with a figure of the tail of the male, showing the number and arrangement of the papillae. Krabbe (1878) gives a figure of the head, which fails to bring out the important features clearly, and no description. Jägerskiöld ((1893) and (1894)) describes little of the anatomy except the presence of an excretory organ like that of typical species of *Contracaecum*, and the structure of the alimentary canal and its appendages, which are figured. v. Linstow (1907) gives a description based on Indian Museum material. This description is fuller than that of Schneider, but it is necessary to consult Schneider and Jägerskiöld as well in order to obtain a fairly complete account of the species.

The figure of the lip given by v. Linstow is quite misleading. The wing-like structures shown on either side may be intended to represent the interlabia, but, if so, give an entirely wrong idea of their shape. In reality the interlabia (fig. 5, *i*, *i'*) are nearly as long as the lips. Each has its free end compressed into a narrow cuticular flange and curved inwards between two of the lips. A distinct "shoulder" is formed at the point where the compression takes place. The pulp of the dorsal lip has its two main anterior lobes separated by a deep "saddle" on the inner side. Each of these lobes also gives rise to a rounded accessory lobe which projects inwards and downwards when the lip is viewed from

the dorsal surface. We can add nothing to Schneider's description of the caudal papillae of the male, except that the arrangement of the postanal papillae is very irregular, and that the preanal series contains only about seven pairs.

The name *lobulatum* is retained for this species on account of the uncertainty as to its identity with *Ascaris delphini* Rud., 1819. The material referred to and named *A. delphini* by Rudolphi was originally recorded from the same host as *C. lobulatum* by Lebeck in 1801. Except for the indication of the host, and the expression "*pollicares*," *A. delphini* Rud. is a *nomen nudum*, and Stiles and Hassall (1899) very properly take the view that, although possibly the same as *A. lobulata*, the species is not identifiable. By other authors (Diesing, Stossich) *A. delphini* has been regarded as a synonym of *A. simplex* Rud., and should this be correct it must belong to the genus *Anisakis*, which differs greatly from *Contracaecum*.

Larval forms of *Contracaecum*.

The collection includes larvae of one or more species of this genus from the peritoneum of the following fishes :—

Barilius bola. Localities, Tharai River ; Gandak River, Saran, N. Bengal.

Callichrous pabda. Locality, Lucknow.

Wallago attu. Locality, Lucknow.

Cyprinus carpio. Locality, Soochow, China.

The material from *Callichrous* and *Wallago* is part of that referred to by Stewart (1914, p. 179) under the numbers L. 33 and L. 36.

Genus **Dujardinia** Gedoelst, 1916.

Dujardinia halicoris (Owen, 1833).

(Figs. 6, 7.)

From intestine of dugong (*Halicore dugong*) (three specimens, in poor condition).

This species has been described in considerable detail by Parona (1889) and by v. Linstow (1906, *a* and *b*). We have only a few slight additions and corrections to make to the existing descriptions, basing our remarks not on the material in the present collection, but on Indian specimens in the British Museum.

There is a well-marked constriction separating the head from the neck (figs. 6, 7). Contrary to the statement of v. Linstow, well developed interlabia are present. They are broad and rounded externally, and bluntly conical at their free ends, which converge towards the axis between the bases of the lips. v. Linstow's figures of the dorsal lip give a rather misleading impression of its shape, this being probably due to tilting and consequent foreshortening. It is almost octagonal in outline. The two small anterior processes of the pulp are conical, and project forwards and inwards. The dorsal lip has two moderately large, simple papillae. The pulp of each ventro-lateral lip is asymmetrical, the ventral lobe being relatively short and carrying a large, double papilla ; the lateral lobe long, with a very small papilla at its extremity. Though dentigerous ridges are absent, the broad cuticular margins of

the lips are folded and produced internally into a series of large, tooth-like projections, usually bilobed. The excretory pore is situated at about 1·2—1·3 mm., and a pair of small cervical papillae, buried in the cuticle, at about 1·4—1·5 mm., from the anterior extremity.

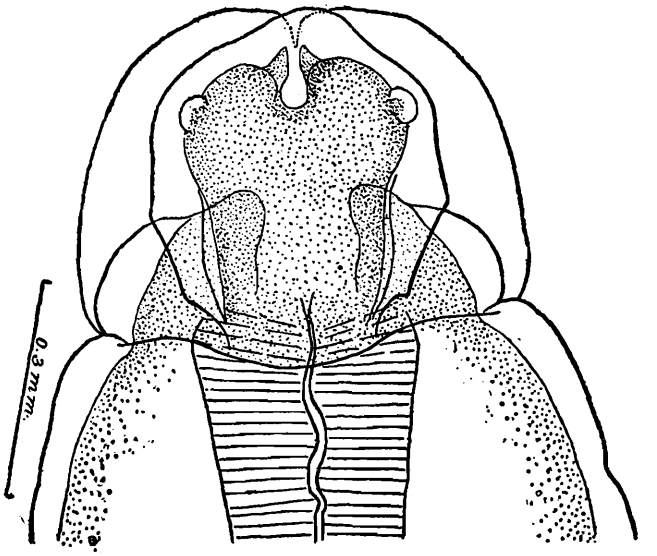

Fig. 6.—*Dujardinia halicoris.* Head of male; dorsal view. (Original.)

The caudal papillae of the male are remarkably few. Parona stated the number as five pairs, while v. Linstow gives seven pairs, of which three are said to be postanal and four preanal. We agree with v. Lin stow as to the number of preanal papillae, but find that in the position

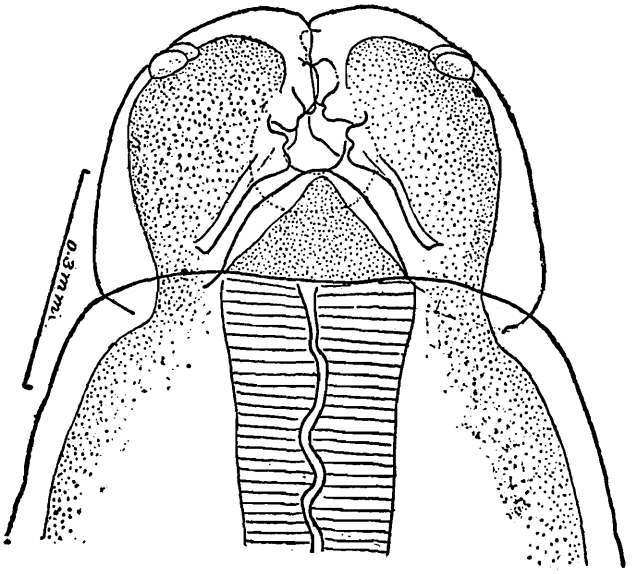

Fig. 7.—*Dujardinia halicoris.* Head of male; ventral view. (Original.)

of his most anterior pair of postanals there are usually two distinct papillae on either side, one close behind the other. In one of the specimens examined, however, while there were two papillae on the left side, only one could be found on the right. The number of papillae seems, therefore, to be normally eight pairs. The spicules are described and figured by v. Linstow as simple rods with a rounded knob at the

proximal extremity. We find that each spicule has a tubular shaft, expanded into a funnel at the proximal end, and a pair of alae, broad distally and much inrolled on the ventral side of the spicule. The spicules measure only 1·1 mm. in length.

The two authors quoted give the position of the vulva correctly as about one-third of the total length from the anterior end. Baird (1859) gave it erroneously as two-thirds. Parona describes and figures the oviducts as arranged in zig-zags. In the female specimens examined by us it is a striking feature that the oviducts, which turn forward immediately from the posterior ends of the uterine branches, run with an almost straight course, parallel to the latter, as far as the level of the vulva, where they become lost in the close transverse loops of the ovarian tubes.

The systematic position of this species is somewhat uncertain. It differs from the form which we regard as *Dujardinia helicina* (Molin), the type of the genus, in having very short spicules and no accessory piece, but agrees with it in the structure of the alimentary canal and other characters (see Baylis (1920) ; also Baylis and Daubney (1922)).

Larval *Anisakinae.*

Encapsuled larval forms of species either of *Porrocaecum* or *Anisakis* occur in the collection from

(*a*) the deep-sea fish, *Dysalotus alcocki* (body-cavity). Marine Survey, Station 315, 705 fathoms.

(*b*) *Callichrous padba* or *Wallago attu.* (Part of " L. 33 " of Stewart (1914), p. 179.) These specimens were sorted out from among the material mentioned above under *Contracaecum.* The form to which Stewart's description applies is evidently the *Contracaecum.*

Larval *Ascaridae.*

(*a*) Two specimens from *Uroconger lepturus,* taken at a depth of 200 fathoms, are in too poor a condition to be assigned to any genus.

(*b*) A number of specimens, encapsuled in the subcutaneous tissue of the brown musk shrew (*Crocidura murina*). Locality, Trivandrum. The material had unfortunately been desiccated, but was restored by means of 1 per cent. saline, followed by a glycerine and alcohol mixture. The worms are of considerable size, and apparently cannot be identified with *Ascaris incisa* Rud., which occurs in shrews and is considered to be the larva of *Porrocaecum depressum* (Zed.) The structure of the alimentary canal was not clearly made out, and it is uncertain whether there is a ventriculus or not. We are unable, therefore, to determine the genus to which the worms belong.

Family *HETERAKIDAE* Raill. and Henry, 1914.

Subfamily HETERAKINAE Raill. and Henry, 1912.

Genus **Ascaridia** Duj., 1845.

Ascaridia perspicillum (Rud., 1803).

From intestine of domestic fowl, Calcutta.

Ascaridia columbae (Gmel., 1790).

From a pigeon, Zoological Garden, Calcutta.

Genus **Strongyluris** A. Müller, 1894.

Strongyluris calotis Baylis and Daubney, 1923.

(Figs. 8, 9.)

Baylis and Daubney (1923), p. 334.

Host: *Calotes nigrilabris*. Position: rectum. Locality: Pattipola, Ceylon.

The male of this species measures 8·9—11·1 mm. in length and 0·4—0·5 mm. in maximum thickness; the female 11—13·65 mm. and 0·55—0·75 mm. respectively. The diameter of the head is 0·06—0·08 mm. Each lip (fig. 8) has broad lateral cuticular expansions and a further cuticular flange projecting anteriorly. The dorsal lip carries two large marginal papillae, the ventro-lateral lips each one papilla, situated further from the margin and towards the ventral side. The neck is wider than the head forming a "shoulder" behind the base of the lips. A second "shoulder" is formed a little further back by the commencement of a cuticular inflation which covers part of the pharyngeal and oesophageal regions. The cuticular striations are exceedingly fine. The lateral fields are of the type usual in the genus. No cervical papillae have been seen, nor any rows of papillae on the body. The alimentary canal shows the structure characteristic of *Strongyluris*.

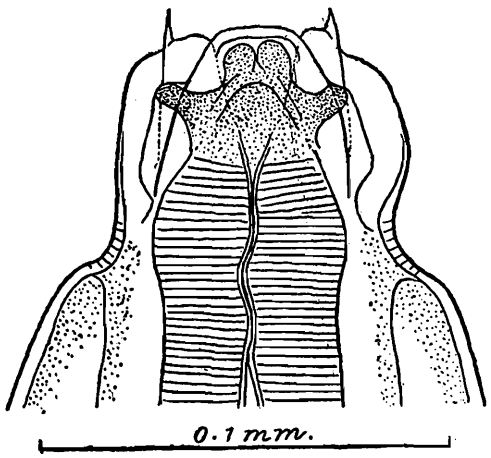

Fig. 8.—*Strongyluris calotis*. Head of female; dorsal view. (Original.)

The distance from the anterior end of the head to the end of the "pharynx" is about 0·26—0·3 mm., and from the same point to the end of the oesophagus, including the bulb, 1·75—2·25 mm. The bulb measures 0·25—0·3 mm. in length and 0·28—0·35 mm. in diameter. The intestine is very wide for a short distance from its junction with the oesophagus, and then becomes very narrow until a short distance before the rectum, where it widens out again into an expanded bulb. The nerve-ring is situated at 0·5—0·55 mm., and the excretory pore at 1·1—1·45 mm., from the anterior end.

The tail, in both sexes, has a minute terminal spike. In the male the tail measures 0·1—0·12 mm. in length. The caudal end is obliquely truncate, but so abruptly as to appear as if cut off almost at right angles to the longitudinal axis of the body. The sucker and the cloaca thus open almost posteriorly. The sucker is of unusual relative depth, its chitinous wall measuring 0·12—0·16 mm. in depth and 0·14—0·17 mm.

in outside diameter. The spicules are subequal, 0·75—0·8 mm. in length, the left being slightly longer than the right. They are simple, tapering tubes, with a maximum diameter of about 0·03 mm., and covered externally with coarse granulations. There appears to be no accessory piece. There are ten pairs of caudal papillae, the arrangement of which can best be indicated by means of a figure (fig. 9). Of the three papillae nearest to the tip of the tail on each side, one is quite lateral, with a long peduncle; one subventral, sessile; and one slightly more lateral than the last-mentioned, very small and slender. Altogether seven pairs may be described as postanal, the remaining three being situated at the sides of the sucker, with a gradual decrease in size from behind forwards.

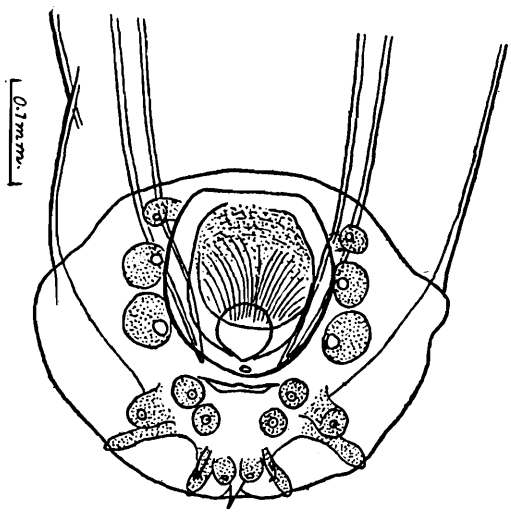

FIG. 9.—*Strongyluris calotis.* Caudal end of male; ventral view. (Original.)

In the female the tail is very short (0·2—0·25 mm). and bluntly rounded behind, with the exception of the little terminal spike. There is a pair of caudal papillae at 0·05 mm. from the tip. The vulva is a transverse slit with rather prominent lips, situated at 4·7—5·65 mm. from the posterior end of the body. The vagina runs forward for a short distance from the aperture, and then turns back upon itself to run posteriorly. The arrangement of the rest of the female organs is that usual in the genus. The eggs are oblong-oval in shape, and of the usual type, with a thick shell. They measure 0·0875—0·0975 mm. × 0·05—0·0525 mm., and when ready for laying contain an embryo which is just beginning to elongate.

Genus **Spinicauda** Travassos, 1920.

Spinicauda sp. (?)

A few immature specimens, in bad condition, from the duodenum of (?) *Lyriocephalus scutatus* (the knob-nosed lizard of Ceylon). No locality mentioned. We are unable to determine the species. As has already been pointed out by one of us (Baylis, 1923 *a*), the genus *Sonsinia*, proposed in our earlier report, falls into synonymy, its species being the same as those of *Spinicauda*.

Family *OXYURIDAE* Cobbold, 1864.

Genus **Oxyuris** Rud., 1803.

Oxyuris equi (Schrank, 1788).

A number of female specimens from a horse. Locality, Lahore.

Genus **Enterobius** Leach, in Baird, 1853.

Enterobius vermicularis (L., 1758).

Two sets of specimens from man.

Genus **Crossocephalus** Railliet, 1909.

Crossocephalus brevicaudatus Baylis and Daubney, 1923.

Baylis and Daubney (1923), p. 333.

Host: Indian rhinoceros (*Rhinoceros indicus*). Position: stomach Locality: Nepal terai, India.

This species was collected in company with a large number of specimens of *Kiluluma stylosa* and a single female referred to *Necator americanus*. The material consists of three females only.

The specimens measure from 5·3 to 6·2 mm. in length and up to 0·4 mm. in maximum thickness. The head has the usual characteristics of the genus. It is furnished with three pairs of armed jaws, and a pair of very prominent ear-like papillae on the cuticular collar. No cervical papillae have been seen. The oesophagus is from 0·945 to 0·955 mm. long. The excretory pore is situated at 1·22 to 1·35 mm. from the anterior end. Its lips are surrounded by a prominent, wrinkled, cuticular swelling, and connected with the pore is an ovoid bladder measuring about 0·13 mm. × 0·08 mm.

The tail is short and blunt, measuring about 0·25 mm. The vulva is situated about 0·13 mm. in front of the anus. The uterus contains from six to eight embryos, varying in size according to the degree of their development, but extremely large in the later stages.

In the absence of males the differentiation of this form from other species of *Crossocephalus* depends entirely upon measurements. In total length the specimens are distinctly shorter than females of *C. longicaudatus* Baylis, from *Rhinoceros sumatrensis*, but are well within the range of the measurements given by Gedoelst (1916) and by v. Linstow (1899) for *C. viviparus*, from the zebra. The excretory pore is situated much nearer to the anterior end in *C. brevicaudatus* than in either of the other species mentioned, while the tail of the female is less than half the length of that of *C. viviparus* and only about one-seventh of that of *C. longicaudatus*. For convenience the tabulated measurements of *C. viviparus* and *C. longicaudatus* given by Baylis (1919) are here reproduced, together with the measurements of *C. brevicaudatus* and of *C. zebrae* Yorke and Southwell. The last species is regarded by Yorke and Southwell (1920) as distinct from *C. viviparus*, chiefly on the ground of the supposed difference in the position of the vulva. The position, however, assigned to the vulva of *C. viviparus* by v. Linstow was, we feel confident, erroneous, and we are inclined to regard *C. zebrae* as a synonym of *C. viviparus*. If the measurements of *C. viviparus* given by v. Linstow and by Gedoelst be compared, it will be evident that the

species has a considerable range of variation in size, and the measurements of *C. zebrae* on the whole fall between the extremes.

	brevicaudatus	*longicaudatus*		*viviparus* [v. Linst.]		*viviparus* [Gedoelst]	*zebrae*	
	♀	♂	♀	♂	♀	♀	♂	♀
Length	5·3—6·2	7·0	9-10	6·32	6·76	5·5—9·5	7·6—8·3	7·4—9·4
Thickness (max.)	0·4	0·5	0·63	0·43	0·55	0·28—0·512	0·44	0·498
Oesophagus, length	0·945-0·955	1·0	1·0	[1·02]	[0·9]	1—1·15	1·002—1·02	1·016—1·085
Tail, length	0·25	0·25—0·3	1·7—1·9	[0·26]	[0·55]	0·575	..	0·488—0·617
Spicules, length	..	0·44, 0·24	..	0·35, 0·26	..	..	0·295—0·353, 0·145—0·176	..
Vulva, distance from anus.	0·13	..	(?	..	2·34	0·192—0·208	..	0·17—0·255
Excretory pore, distance from anterior end.	1·22-1·35	less than 2·0.	2·0	close behind oesophagus.		1·9—2·2	2·027—2·172	1·866—2·11.

Family *KATHLANIDAE* Travassos, 1918.

Genus **Zanclophorus** Baylis and Daubney, 1922.

Zanclophorus kempi Baylis and Daubney, 1922.

This species is represented by a single young female specimen from the type host, *Testudo elongata.*

Superfamily FILARIOIDEA Weinland, 1858.

Family *FILARIIDAE* Claus, 1885.

Subfamily FILARIINAE Stiles, 1907.

Genus **Acanthocheilonema** Cobbold, 1870.

Acanthocheilonema evansi (Lewis, 1882).

(Figs. 10, 11.)

Filaria evansi Lewis, 1882.

The material consists of one female and a portion of a male taken from the spermatic artery of a camel at Lahore, Punjab.

The female specimen measures about 210 mm. in length and 0·73 mm. in maximum thickness. The available portion of the male, which consists of about 15 mm. of the posterior end, indicates that the male is very much more slender.

The body of the female tapers gradually from the middle to the head and tail, and more abruptly in the first half-millimetre from the head and in the last millimetre of the posterior end. The tail is not spirally coiled. The cuticle is without transverse striation, but is finely striated

in the longitudinal direction. The head is truncate, and surrounded by a slight ridge which is more prominent laterally. This ridge is supported by five papillae on either side. Of these one is lateral, two sublateral and two submedian. The papillae are only very slightly prominent. There is no buccal capsule. The oesophagus is divided into two sections, a short anterior section in front of the nerve-ring, 0·204 mm. long, and a long posterior section of 6·506 mm. The anterior section is club-shaped, the posterior slightly sinuous. The nervering is broad and distinct. A pair of fine cervical papillae is present at 0·25 mm. from the anterior end. The tail measures 0·238 mm. in length. According to Major Stewart's notes, its "terminal portion is slightly enlarged, and bears three faint grooves on the posterior border." The vulva, which has a circular aperture, is situated at 0·595 mm. from the anterior end. The vagina is long, narrow, muscular, and folded transversely and longitudinally. The branches of the uterus originate at about 3·9 mm. from the head. They are distended with a mass of closely-packed embryos.

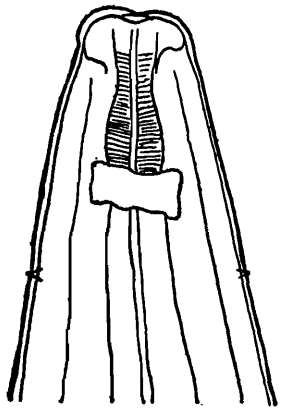

Fig. 10.—*Acanthocheilonema evansi.* Anterior end of female; dorsal view. (From Major Stewart's drawing.)

The tail of the male is spirally coiled and without alae. There are four pairs of preanal and three pairs of postanal papillae (fig. 11). The spicules are very unequal and dissimilar. The left is 1 mm. in length and is divided into a proximal, thicker, handle-like portion and a thinner, blade-like distal portion with the tip bent almost at a right angle. The right spicule is much shorter (0·179 mm.), thick, darker brown in colour and with a rough ventral surface.

The foregoing description is taken, with some modification, from Major Stewart's manuscript. We have placed this species in the genus *Acanthocheilonema* on account of the characters of the oesophagus, the spicules and the caudal papillae of the male. The members of this genus are usually referred to as having two pairs of postanal papillae in the male. We have examined specimens of *A. gracile*, and find that they have three pairs, and a pair of small cuticular appendages anterior to the most posterior pair of papillae. In *A. evansi* again there are three pairs of postanal papillae, and a small, flattened, terminal button. We have been unable to detect any lateral appendages. Possibly the "grooves" mentioned above in the female may indicate the existence of a rudiment of these structures.

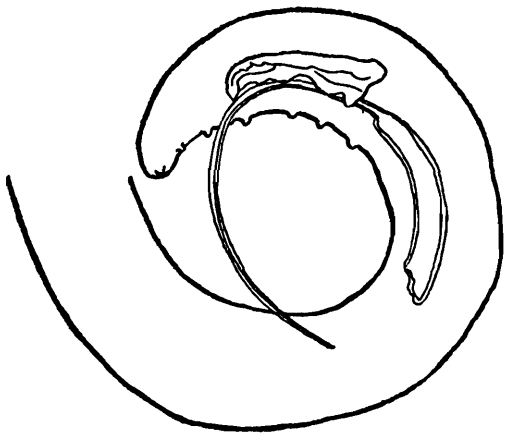

Fig. 11.—*Acanthocheilonema evansi.* Caudal end of male; lateral view. (From Major Stewart's drawing.)

Genus **Setaria** Viborg, 1795.

Setaria equina (Abildg., 1789).

A single female specimen from a horse.

Setaria sp.

Fragments, species unrecognizable, from the eye of a horse.

Subfamily Onchocercinae Leiper, 1911.

Genus **Onchocerca** Dies., in Herm., 1841.

Onchocerca sp.

From the subcutaneous tissue of a camel. Probably referable to *O. fasciata* Raill. and Henry, 1910.

Superfamily SPIRUROIDEA Raill. and Henry, 1915.

Family *SPIRURIDAE* Örley, 1885.

Subfamily Spirurinae Raill., 1915.

Genus **Habronema** Dies., 1861.

Habronema muscae (Carter, 1861).

One male and several females from a horse, from Egypt. A careful description of this species has been given by Ransom (1913).

Habronema megastoma (Rud., 1919).

(Figs. 12-16.)

Host: horse. Localities: Lahore, Punjab; Muktesar.

The literature on this species is very scattered and it seems desirable to give a short re-description of it, based in part on Major Stewart's notes.

The male measures about 8 mm. in length and up to 0·27 mm. in maximum thickness; the female about 11 mm. and up to 0·374 mm. respectively.

The head, which measures about 0·11 mm. in diameter, is separated from the body by a very distinct groove, a feature which serves to distinguish this species readily from *H. muscae* and *H. microstoma*. There is a "shoulder" of somewhat thickened cuticle immediately behind the groove. The mouth has four lips, two median (dorsal and ventral) and two lateral. The free edges of the dorsal and ventral lips are membranous, projecting slightly over the mouth-aperture. Each median lip has two submedian papillae, and each lateral lip one large papilla. Each of the submedian papillae has two terminations, the outer of which is situated on

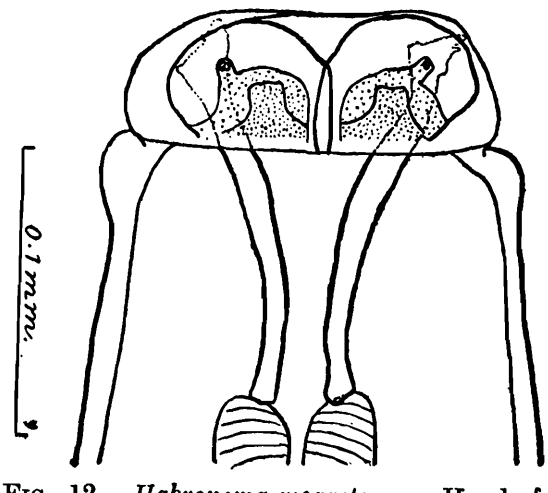

Fig. 12.—*Habronema megastoma*. Head of female; dorsal view. (Original.)

the external surface of the lip. The inner is supplied by a branch of the pulp which extends to the internal surface of the lip, and in a frontal view (fig. 14) is overlapped by the lateral lip. These inner terminations may function as the pores of the head-glands rather than as sensory organs.

The buccal capsule is funnel-shaped and measures about 0·13 mm. in length. Its wall, which is formed of two separate lateral halves, reaches to the edge of the mouth. The narrow anterior portion of the œsophagus is 0·185 mm. long, the thicker posterior portion about 0·89 mm. The nerve-ring is just anterior to the junction of the two portions.

The tail of the male is curled into a close spiral and is alate. It is flattened and expanded to form a lanceolate adhesive surface covered with rugae, which extend also on to the alae. There are four pairs of pedunculate preanal and five pairs of postanal papillae. Of the latter the four posterior pairs are ventrally situated, close to the median line, the three posterior pairs forming a symmetrical group close to the tip of the tail. The fifth postanal pair is situated just behind the cloacal aperture. The members of this pair are asymmetrical and more laterally placed. That of the right side is broad and stretches almost to the middle line, while that of the left side is much smaller. The spicules are very unequal. The left is 0·46 mm. long, cylindrical and strongly curved; the right shorter (0·24 mm.), flattened and grooved ventrally to receive the left spicule. There is a small accessory piece.

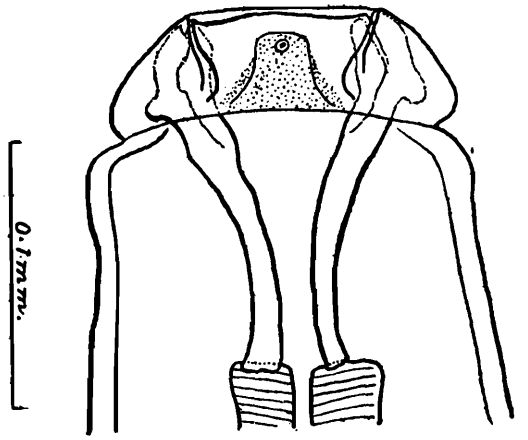

Fig. 13.—*Habronema megastoma.* Head of female; lateral view. (Original.)

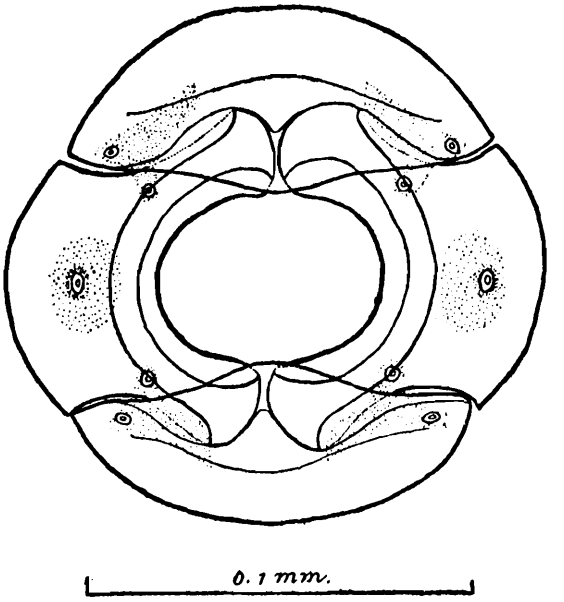

Fig. 14.—*Habronema megastoma.* Head of female; viewed *en face.* (Original.)

The tail of the female is 0·28 mm. long and bluntly conical. The vulva is situated at about the junction of the anterior and middle thirds of the body. Its orifice is surrounded by a small, raised, cuticular ring. It opens into a small muscular pouch, or "ovejector," directed dorsally and posteriorly from the vulva at an angle of about 45 degrees to the main axis of the body, and followed by a tube with thick, muscular walls (the structure frequently referred to by Seurat as a "vestibule"). There is no clear distinction between the vagina and the unpaired portion of the uterus. The muscular tube runs directly backwards from the pouch, its point of origin being on the posterior side of that organ. It measures about 0·8 mm. in length. The uterine branches are muscular near their origin. One runs straight backwards, the other doubles forwards after running posteriorly for some considerable distance. The uterus is packed with eggs containing fully-formed embryos.

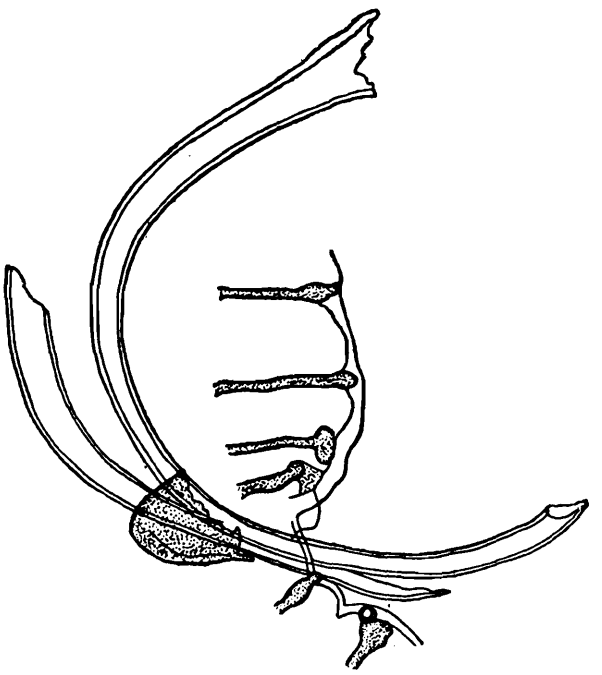

Fig. 15.—*Habronema megastoma.* Cloacal region of male (× 340); lateral view showing spicules, accessory piece and some of the papillæ. (From Major Stewart's drawing.)

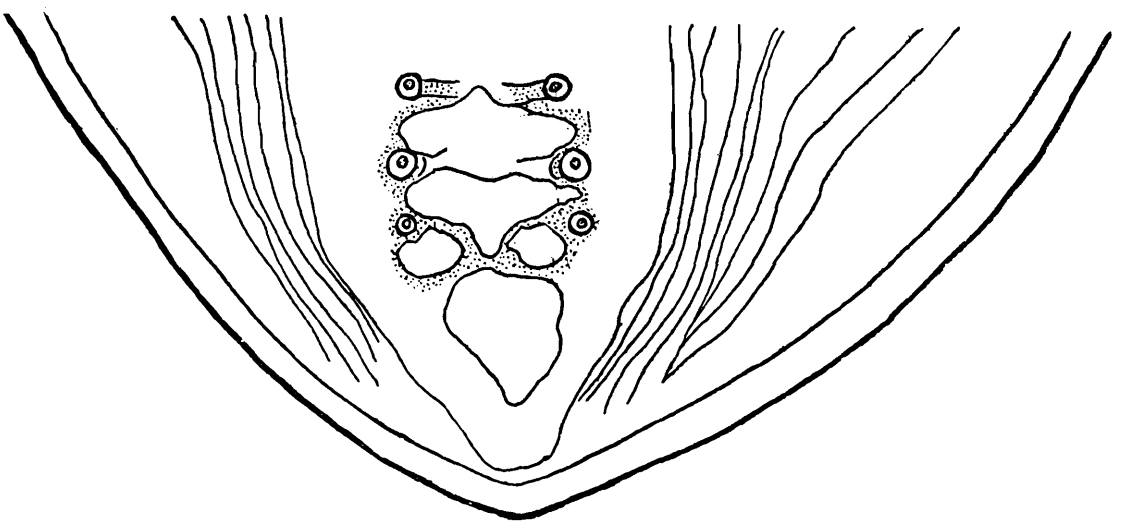

Fig. 16.—*Habronema megastoma.* Extremity of tail of male; ventral view. (From Major Stewart's drawing.)

Subfamily Arduenninae Raill. and Henry, 1911.

Genus **Spirocerca** Raill. and Henry, 1911.

Spirocerca sanguinolenta (Rud., 1819).

This species has recently been redescribed and figured by one of us (Baylis, 1923*b*), and its affinities discussed. It is represented in the

present collection by a few specimens from a dog. Locality, Lahore, Punjab.

Subfamily GONGYLONEMINAE Hall, 1916.

Genus **Gongylonema** Molin, 1857.

Gongylonema scutatum (Leuck., 1873).

This species occurs in the collection from the following hosts: Ox; buffalo (*Bos bubalus*); "Kar kar[1] sheep."

Subfamily PHYSALOPTERINAE Stoss., 1898 (*fide* Stiles & Hassall).

Genus **Physaloptera** Rud., 1819.

Physaloptera praeputialis v. Linst., 1889.

Two females from the intestine of a domestic cat; Museum compound, Calcutta.

Physaloptera quadrovaria Leiper, 1908.

A few specimens, in poor condition, already determined as *P. quadrovaria*, from the "stomach and body-cavity" of *Varanus exanthematicus*. Locality, Katagum, Northern Nigeria. (Presented to the Indian Museum by Dr. J. H. Ashworth.)

According to Seurat, *P. quadrovaria* is a synonym of *P. varani* Parona, 1899. Ortlepp (1923), however, who has re-examined the type-material of *P. quadrovaria*, states that *P. varani* "differs from *P. quadrovaria* by its longer œsophagus, shorter tail of the female, less evolved type of origin of the uteri, and also by the absence of denticles on the inner surface of the lips." In the present material the rows of small denticles on the lips, figured by Ortlepp for *P. quadrovaria*, are present, and in most other respects the specimens seem to agree better with this author's account of that species than with that of *P. varani*. The structure of the vagina and its connections, however, and the mode of origin of the uterine branches, conform more closely with his description of *P. varani*. Probably there is considerable variation in the arrangement of the female apparatus, as there is, for example, in that of *Tanqua tiara* (see Baylis and Lane, 1920, pp. 262-264). It seems unwise to attach very great importance to the precise mode of branching of the uterus (as apart from the number of branches) as a specific character. Characters based upon the armature of the lips, however, are probably much more stable, and for this reason we have adhered to the previous determination as *P. quadrovaria*.

Family *CAMALLANIDAE* Raill. and Henry, 1915.

Genus **Camallanides** Baylis and Daubney, 1922.

Camallanides prashadi Baylis and Daubney, 1922.

A few specimens from a rat-snake (*Zamenis mucosus*), collected in the Calcutta Zoological Gardens by Major Knowles, appear to belong to

[1] Almost certainly the urial (*Ovis vignei*).—*N. A.*

the same species as the material described in our former paper from *Bungarus fasciatus.*

Family *GNATHOSTOMIDAE* Raill., 1915, *emend.* Baylis and Lane, 1920.

Subfamily Gnathostominae Baylis and Lane, 1920.

Genus **Tanqua** R. Blanchard, 1904.

Tanqua tiara (v. Linst., 1879.)

Material of this species occurs in the collection from —

(*a*) *Varanus salvator;* Zoological Garden, Calcutta.
(*b*) *Varanus nebulosus* (intestine); Ballygunj, Calcutta.
(*c*) *Varanus niloticus* and *V exanthematicus* (stomach); Northern Nigeria. (Dr. J. H. Ashworth.)

Tanqua anomala (v. Linst., 1904).

This species is represented by specimens preserved *in situ* in the stomach of a sea snake (*Hypsirhina enhydris*), collected by Col. F. Wall, I.M.S.

Family *THELAZIIDAE* Raill., 1916.

Genus **Thelazia** Bosc, 1819.

Thelazia rhodesii (Desm., 1828).

Two females, from the lacrymal canal of a bullock. This species has been dealt with by Railliet and Henry (1910).

Superfamily TRICHINELLOIDEA Hall, 1916.

Family *TRICHINELLIDAE* Stiles and Crane, 1910.

Subfamily Trichurinae Ransom, 1911.

Genus **Trichuris** Roederer, 1761.

Trichuris trichiura Roederer, 1761.

This species is represented in the collection by specimens from man.

Trichuris ovis (Abildg., 1795).

Examples from a sheep, collected at Lahore, Punjab.

Superfamily DIOCTOPHYMOIDEA Raill., 1910 (*fide* Travassos).

Family *DIOCTOPHYMIDAE* Raill., 1915.

Genus **Eustrongylides** Jägerskiöld, 1909.

Eustrongylides sp. (?)

Specimens found encapsuled in a fish (*Nemachilus yarkandensis*), from Yarkand. According to the label "there were more than six

of these parasites, some more than 2 in. long. Of each one end was in coils inside a cyst, and the other end buried either in the body-wall, liver, testis or coils of the intestine." The worms are immature. Two specimens removed from their capsules measured 30·85 mm. and 28·45 mm. in length respectively. The œsophagus of the longer specimen was 9·75 mm. long, and that of the shorter 7·75 mm. The maximum thickness of each specimen was about 0·5 mm.

Superfamily STRONGYLOIDEA Weinland, 1858.

Family *STRONGYLIDAE* Baird, 1853, *s. s.* Lane, 1917.

Subfamily Strongylinae, Raill., 1893, *s. s.* Leiper, 1908.

Genus **Strongylus** Müller, 1780.

Strongylus equinus Müller, 1780.

Examples from a horse. Locality, Egypt.

Strongylus vulgaris (Looss, 1900).

Three females from a horse. Locality, Egypt.

Strongylus edentatus (Looss, 1900).

Examples from a horse. Locality, Lahore, Punjab.

Genus **Cylicostomum** Raill., 1901.

Cylicostomum tetracanthum (Mehl., 1831) and *C. nassatum* (Looss, 1900) are represented by specimens from the horse.

Genus **Oesophagostomum** Molin, 1861.

Oesophagostomum (Proteracrum) radiatum (Rud., 1803).

A single female, from a buffalo (*Bos bubalus*).

Oesophagostomum (Proteracrum) columbianum Curtice, 1890.

A single female, from a sheep.

Genus **Kiluluma** Skrjabin, 1916.

Kiluluma stylosa (v. Linst., 1907).

Examples from the stomach of a rhinoceros (*Rhinoceros indicus*). Locality, Janakpore, Nepal.

Skrjabin (1916) has given a full account of this interesting species.

Subfamily Deletrocephalinae Raill., 1916.

Genus **Diaphanocephalus** Dies., 1851.

Diaphanocephalus willeyi (v. Linst., 1904).

Specimens occur in the collection from the banded krait (*Bungarus fasciatus*). The species was redescribed in our earlier report (Baylis and Daubney, 1922).

Subfamily Stephanurinae Raill., Henry and Bauche, 1919 (*fide* Travassos, 1920 [?]).

Genus **Stephanurus** Dies., 1839.

Stephanurus dentatus Dies., 1839.

A few specimens, in very poor condition, from the portal vein of a pig. One of us (Daubney, 1923) has recently dealt with the anatomy and systematic position of this species.

Family *ANCYLOSTOMIDAE* Looss, 1911, *emend.* Lane, 1917.

Subfamily Ancylostominae Looss, 1905, *emend.* Lane, 1917

Genus **Ancylostoma** (Dubini, 1843) Creplin, 1845.

Ancylostoma duodenale (Dubini, 1843).

The collection contains examples of this species from man (India and Egypt), and also a single female from a tiger (Zoological Garden, Calcutta).

Ancylostoma caninum (Ercolani, 1859).

This species is represented by material from dogs (localities, Lahore, Punjab, and Kowloon, China), and from a wild jackal taken in the Museum compound, Calcutta.

Ancylostoma braziliense de Faria, 1910.

Syn. *A. ceylanicum* (Looss, 1911).

A few specimens from a dog. Locality, Kowloon, China.

Lane (1922) has recently supported the view, previously expressed by Leiper, that *A. ceylanicum* is merely a synonym of *A. braziliense*, by a careful comparison of Brazilian and Indian material. The same conclusion had also been reached by Gordon (1922).

Subfamily Necatorinae Lane, 1917

Genus **Necator** Stiles, 1903.

Necator americanus (Stiles, 1902).

In our former report we referred to some examples of this species collected from an African rhinoceros (*Rhinoceros bicornis*) in the Zoological Garden, Calcutta. The present collection contains a single female specimen taken, along with *Crossocephalus brevicaudatus* and *Kiluluma stylosa*, from a wild Indian rhinoceros (*R. indicus*). This appears to afford good evidence that *N. americanus* occurs naturally in rhinoceroses. It does not seem at all likely that in the present case there has been any admixture of material from a different host, since among all the material received by us from the Zoological Survey we have found no specimens of *Necator* except those from rhinoceroses.

Genus **Tetragomphius** Baylis and Daubney, 1923.

The interesting species already briefly described (Baylis and Daubney, 1923, p. 334) under the name of *Tetragomphius procyonis* has affinities with both the subfamilies Ancylostominae and Necatorinae. In this respect it occupies a position somewhat similar to that of *Uncinaria* (see Baylis and Daubney, 1922, p. 337). We have considered it necessary to form a new genus, which may be defined as follows:—

Ancylostomidae: closely resembling *Uncinaria* in general appearance. Body somewhat tapered anteriorly, head bent dorsally. Mouth-capsule cup-shaped. No teeth at anterior margin. At base of capsule a pair of subdorsal and a pair of subventral teeth. General form of male genital bursa much as in *Uncinaria*. Tips of dorsal ray bifurcate. Spicules long, filiform and unbarbed. Vulva in posterior half of body.

Tetragomphius procyonis Baylis and Daubney, 1923.

(Figs. 17—20.)

Baylis and Daubney (1923), p. 334.

Host: raccoon (*Procyon* sp.). Locality, Zoological Garden, Calcutta.

The material consists of a large number of specimens taken from what appears, from histological examination, to be the pyloric end of the stomach. Most of the worms appear to have been inhabiting galleries in the substance of a fibrous tumour of the stomach-wall. The general appearance of the tumour is much like that of the tumours of the horse's stomach in which *Habronema megastoma* is found.

The males of the species measure from 13 to 15 mm. in length and up to 0·46 mm. in thickness; the females from 16 to 20 mm. and up to 0·65 mm. respectively. There is a rather long, slender neck. The head, which is bent dorsally, is small in comparison with the general thickness of the body. It measures about 0·14 mm. in diameter. The cup-shaped buccal capsule is furnished at its base with a pair of subdorsal and a pair of subventral teeth. The subdorsal teeth are bicuspid, the stout conical cusps measuring from 11 to 18 μ in height. The subventral teeth are more slender structures, about 43 μ in height. They may appear bidentate or tridentate. The dorsal gutter is seen as a blunt tubercle in the dorsal wall at the base of the capsule. The œsophagus is about 0·65 mm. in length and up to 0·13 mm. in maximum thickness. The cervical papillae are at 0·6—0·7 mm. from the anterior end. They have the form of stout, well-developed, backwardly-projecting spines.

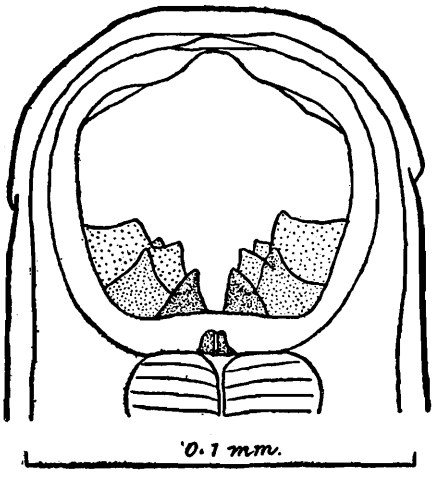

FIG. 17.—*Tetragomphius procyonis.* Head of female; dorsal view. (Original.)

The genital bursa of the male is rather short and has a stunted appearance. In lateral view it cannot be distinguished from the bursa of *Uncinaria*; that is to say, the ventral rays are slender and closely applied to each other, and the externo-lateral diverges somewhat from

the other two lateral rays. The main trunk of the dorsal ray is short and exceedingly thick. Its two divisions are bifurcate at their tips. The genital cone is short and fairly stout. The spicules are filiform and extremely long. They measure from 7 to 8 mm. in length, and are drawn out into long, fine points posteriorly.

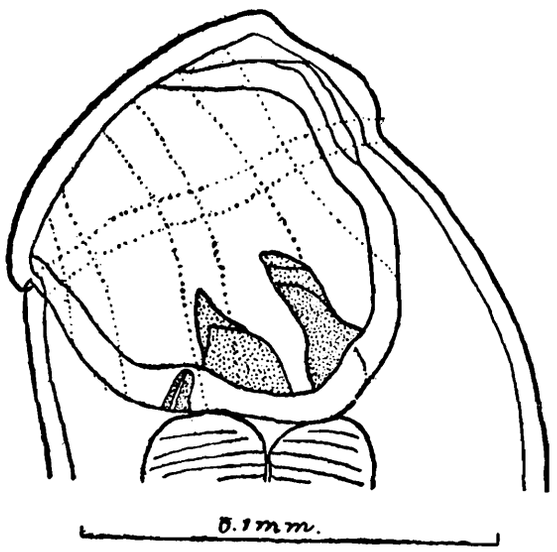

Fig. 18.—*Tetragomphius procyonis.* Head of female ; lateral view. (Original.)

The tail of the female is about 0·34 mm. long and bluntly pointed. The vulva is situated at from 3·6 to 4 mm. from the posterior extremity. Its opening is a transverse slit bounded by fairly prominent lips. There is a short transverse vagina and feebly-muscular ovejectors which run in opposite directions. After a short course backwards the posterior ovejector returns, running forwards past the vulva. Both branches of the uterus are anterior. The eggs in the vagina measure 0·076—0·082 mm. ×0·045—0·05mm., and are segmenting when deposited.

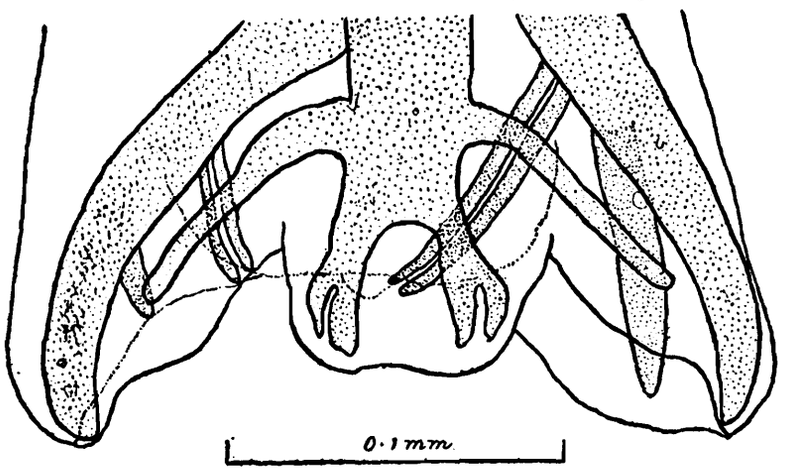

Fig. 19.—*Tetragomphius procyonis.* Genital bursa of male ; dorsal view. (Original.)

The possibility has been considered that this species may be identical with one of the two species described by Molin (1861) from *Procyon*

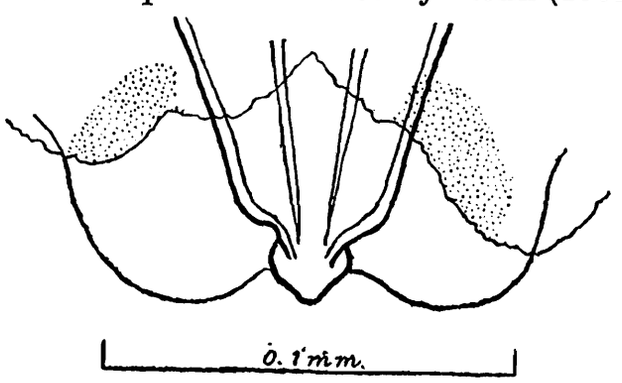

Fig. 20.—*Tetragomphius procyonis.* Genital cone of male ; ventral view. (Original.)

cancrivorus. According to Molin, however, neither *Dochmius bidens* nor *D. maxillaris* exceeded 8 mm. in length in the case of the female.

In the absence of figures of these two species, and having regard to the brevity of the descriptions, we have considered the measurements sufficient to warrant our leaving these species out of consideration.

Family *THICHOSTRONGYLIDAE* Leiper, 1912.

Subfamily TRICHOSTRONGYLINAE Leiper, 1908.

Genus **Haemonchus** Cobb, 1898.

Haemonchus contortus (Rud., 1803).

A few specimens from a sheep.

Haemonchus longistipes Raill. and Henry, 1909.

From a camel.

This species has recently been carefully redescribed by Boulenger (1921).

Genus **Nematodirus** Ransom, 1907.

Nematodirus sp.

Fragmentary material from a camel. It is impossible to determine the species.

Genus **Mecistocirrus** (Raill. and Henry, 1912) Neveu-Lemaire, 1914.

Mecistocirrus fordii (Daniels, 1908).

A few female specimens from the abomasum of a calf.

Genus **Oswaldocruzia** Travassos, 1917.

Oswaldocruzia filiformis (Goeze, 1782).

Two females from *Bufo melanostictus*; locality, Nankouri Island, Nicobars. Collected by Major R. B. S. Sewell, I.M.S.

Family *METASTRONGYLIDAE* Leiper, 1908.

Subfamily METASTRONGYLINAE Leiper, 1908.

Genus **Metastrongylus** Molin, 1861.

Metastrongylus apri (Gmel., 1790).

Fragmentary material from the bronchi of a pig.

Genus **Dictyocaulus** Raill. and Henry, 1907.

Dictyocaulus filaria (Rud., 1809).

Examples from the lungs of a sheep.

Subfamily Rictulariinae Hall, 1913.

Genus **Rictularia** Fröl., 1802.

Rictularia cahirensis Jägerskiöld, 1904.

Several female specimens, apparently of this species, were taken from the intestine of a civet (*Viverricula malaccensis*).

R. cahirensis was originally described from the domestic cat in Cairo, and has also been recorded by Vevers (1923) from the South American Azara's fox (*Canis azarae*).

[Superfamily ?]

Family *MERMITHIDAE* Braun, 1883.

Genus **Mermis** Duj., 1842.

Mermis nigrescens Duj., 1842.

A single mature female, which we refer to this common European species, was taken at Pashok, Darjiling district, Eastern Himalayas, at an altitude of 4,000 feet. The ova of this specimen are of the same form and size as those of European specimens of *M. nigrescens*, but the inner shell does not show the usual rather dark brown colour, being almost colourless. This may perhaps be only a matter of age.

Genus **Mermis,** *sens. lat.*

In the introduction to our earlier report it was stated that the first collection included some Mermithidae. It was hoped that a study of these might lead to results worthy of publication at a later date. Unfortunately, however, these worms have all proved to be immature, and we have not felt justified in reporting upon them in detail.

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